11-5805-247-12

# TM 11-5805-247-12

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE MANUAL

# INCLUDING REPAIR PARTS AND SPECIAL TOOL LISTS

## CONVERTER, TELEGRAPH-TELEPHONE SIGNAL TA-182/U

This copy is a reprint which includes current pages from Changes 1 and 2.

HEADQUARTERS, DEPARTMENT OF THE ARMY
NOVEMBER 1965

D 101.11:

READEX FICHE best copy available

**WARNING**

**HIGH VOLTAGE**

is used in this equipment

**DEATH ON CONTACT**

may result if safety precautions are not observed.

Do not touch the LOOP binding posts on the front panel while the TA-182/U is in operation; 90-volt ringing signals may be present. Do not touch internal wiring or parts when the TA-182/U is removed from its case for test or repairs; voltages as high as *355 volts ac* are present on some internal wiring and components. Turn off the power and discharge all high-voltage capacitors before making any repairs.

**DON'T TAKE CHANCES!**

TM 11-5805-247-12
C 2

CHANGE
No. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 28 November 1983

# OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOL LISTS CONVERTER, TELEGRAPH-TELEPHONE SIGNAL TA-182/U (NSN 5805-00-263-3326)

TM 11-5805-247-12, 9 November 1965, is changed as follows:

1. The title is changed as shown above.

2. New or added material is indicated by a vertical bar in the margin of the page.

3. Added or revised illustrations are indicated by a vertical bar adjacent to the illustration identification number.

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| *Remove pages* | *Insert pages* |
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| 4-1 through 4-4 | 4-1 through 4-4 |
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No. 11–5805–247–12

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D C, *9 November 1965*

# OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOL LISTS

# CONVERTER, TELEGRAPH-TELEPHONE SIGNAL TA-182/U (NSN 5805-00-263-3326)


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*This manual supersedes TM 11–5805–247–10, 27 June 1960, including C 4, 24 February 1965; TM 11–5805–247–20, 16 June 1960, including C 1, 1 September 1961, and C 3, 5 October 1964; TM 11–5805–247–20P, 1 April 1965.

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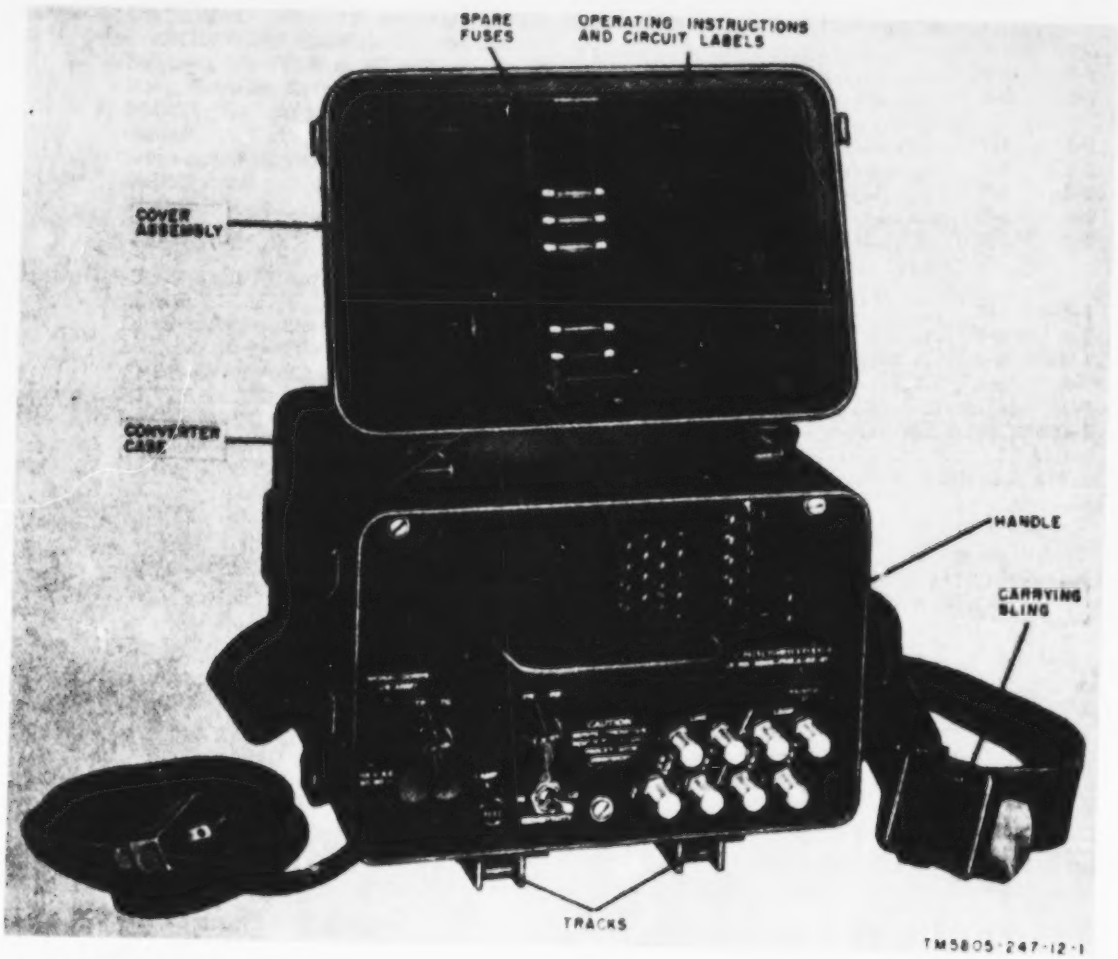



*Figure 1-1. Converter, Telegraph-Telephone Signal TA-182/U, less spare electron tubes and spare lamp.*

# CHAPTER 1

# INTRODUCTION

## 1-1. Scope

*a.* This manual describes Converter, Telegraph-Telephone Signal TA-182/U (fig. 1-1), and covers its installation, operation, and operator's and organizational maintenance.

*b.* A list of applicable references is contained in appendix I.

*c.* A list of operator's repair parts (basic issue items) is contained in appendix II.

*d.* The maintenance allocation chart is contained in appendix III.

*e.* The allocation of tools and test equipment is contained in appendix III.

*f.* A list of organizational maintenance repair parts and special tools is contained in appendix IV.

## 1-2. Consolidated Index of Army Publications and Blank Forms

Refer to the latest issue of DA Pam 310-1 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

## 1-3. Maintenance Forms, Records, and Reports

*a. Reports of Maintenance and Unsatisfactory Equipment.* Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750. The Army Maintenance Management System.

*b. Report of Packaging and Handling Deficiencies.* Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.73A/AFR 400-54/MCO 4430.3F.

*c. Discrepancy in Shipment Report (DISREP) (SF 361).* Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33C/AFT 75-18/MCO P4610.19D/DLAR 4500.15.

## 1-4. Reporting Errors and Recommending Improvements

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703.

## 1-5. Reporting Equipment Improvement Recommendations (EIR)

If your converter needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. We'll send you a reply.

## 1-6. Administrative Storage

Administrative Storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage the PMCS should be performed to assure operational readiness. Disassembly and repacking of equipment for shipment or limited storage are covered in chapter 8.

## 1-7. Destruction of Army Electronics Materiel

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

# CHAPTER 2
# DESCRIPTION AND DATA

## 2-1. Purpose and Use

The TA-182/U converts 20-cycle-per-second (cps) ringing signals to either 1,225- or 1,600-cps ringing signals. It also converts either 1,225- or 1,600-cps ringing signals to 20-cps ringing signals. It is used to provide signaling over circuits that will not pass 20-cps ringing signals because of line or equipment characteristics. A typical terminal application of a TA-182/U is shown in figure 2-1. Specific system arrangements are covered in TM 11-5805-254-15.

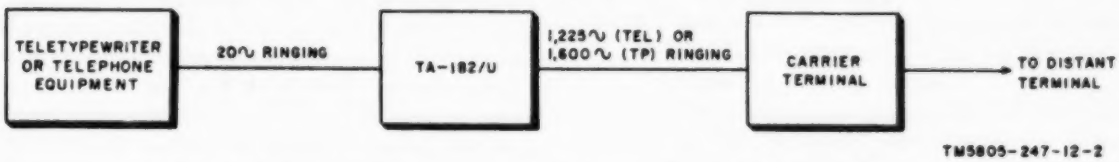



*Figure 2-1. Typical terminal arrangement of Converter, Telegraph-Telephone Signal TA-182/U.*

## 2-2. Technical Characteristics

Circuit application.....Used with either 2-wire or 4-wire systems.
Line bridging impedance....5,000 ohms (approximate).
Minimum input level (sensitivity):
  Ringing signals.....25 volts.
  Voice frequency (vf) signals.....-45 dbm.
Output signal levels:
  Loop.....90± 10 volts ac.
  Line:
    Telegraph.....0±2 dbm.
    Telephone.....+4 dbm to -2 dbm.
Power consumption.....36 watts (approximate).
Voltage requirements.....115 volts ac ±10 percent, 50 to 60 cps.
Signaling frequencies:
  Loop.....20±3 cps.
  Line:
    Telegraph.....1,225±8 cps.
    Telephone.....1,600±8 cps.

## 2-3. Items Comprising an Operable Equipment

Converter, Telegraph-Telephone Signal TA-182/U comprises an operable equipment.

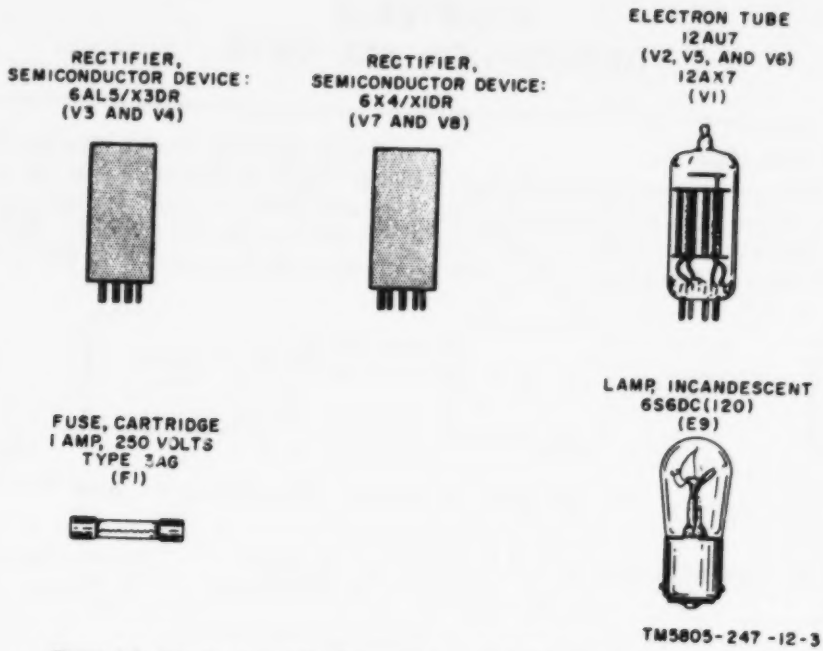



*Figure 2-2. Running spares for Converter, Telegraph-Telephone Signal TA-182/U.*

## 2-4. Description

(fig. 1-1)

Converter, Telegraph-Telephone Signal TA-182/U is 7-1/2 inches high, 10-1/2 inches wide, and 11 inches deep. It weighs 15 pounds. All operating controls are located on the front panel, and all connections are made on the front panel. When the cover is closed and secured, the TA-182/U is waterproof. Tracks are provided on the bottom of the TA-182/U case so that it can be mounted either in Mounting MT-791/U (para 3-4*c*) or in a suitable equipment rack.

# CHAPTER 3

# INSTALLATION

## Section I. SERVICE UPON RECEIPT OF EQUIPMENT

### 3-1. Unpacking

(fig. 3-1)

*a. Typical Packing and Packaging Data.* When a single TA-182/U is packed for domestic or export shipment, it is placed in a water-resistant fiberboard container and sealed. When shipped in quantity, six TA-182/U's in separate fiberboard containers are packed in a wooden box. Packing information for the TA-182/U is given in the chart below.

| Packed units | Outside dimensions (in.) | Volume (cu ft) | Packed weight (lb) |
|---|---|---|---|
| 1 | 15 x 12½ x 9 | 0.98 | 20 |
| 6 | 30 x 26½ x 16½ | 7.59 | 180 |

*b. Removing Contents* (fig. 3-1). When equipment is received, unpack it in a sheltered area as close as possible to the site at which it will be used. Perform the procedures below that are appropriate for the type of shipment received; refer to (1) through (8) for equipment shipped in wooden boxes; refer to (4) through (9) for single unit shipment.

(1) Cut the steel straps approximately 3 inches below the top of the wooden box and fold them back.

(2) Remove the nails from the top of the wooden box with a nailpuller and remove the top.

(3) Lift each fiberboard container out of the box, in turn, and remove the technical manuals.

(4) Cut the pressure-sensitive tape around the top of each fiberboard container and open the flaps. Make certain that the cutting tool does not enter the interior of the container.

(5) Remove the flat corrugated-fiberboard pads from the top and four sides of the equipment and lift the TA-182/U out of the container.

(6) Remove the remaining package from the fiberboard container. This package contains the running spares.

(7) Cut through the three edges of one side of the running spares package. Make sure that the cutting tool does not enter the interior of the package.

(8) Fold back the side of the running spares package and remove the contents.

(9) Remove the technical manuals from the top of the TA-182/U.

### 3-2. Checking Unpacked Equipment

Check to see that the type and quantity of items received are the same as those described on the packing list. When no packing list accompanies the equipment, refer to appendix II to determine what the contents of the package should be.

*Note.* The spare fuses (app. II) are stored inside the cover assembly of the TA-182/U (fig. 1-1).

*a.* Loosen the carrying sling (fig. 1-1). Release the spring-lock fasteners and swing open the cover assembly.

*b.* Check the fuses inside the cover assembly for damage, insecure mounting, or improper size.

*c.* Unwind the power cord from its stored location against the front panel.

*d.* Remove the fuse from the front panel of the TA-182/U by depressing the fuse cap and turning one-quarter turn counterclockwise and pulling out of fuseholder.

*e.* Remove the fuse from the fuse cap. Check the fuse for damage, proper installation, and correct size (1 ampere, 250 volts).

*f.* Check the switches and binding posts for proper functioning.

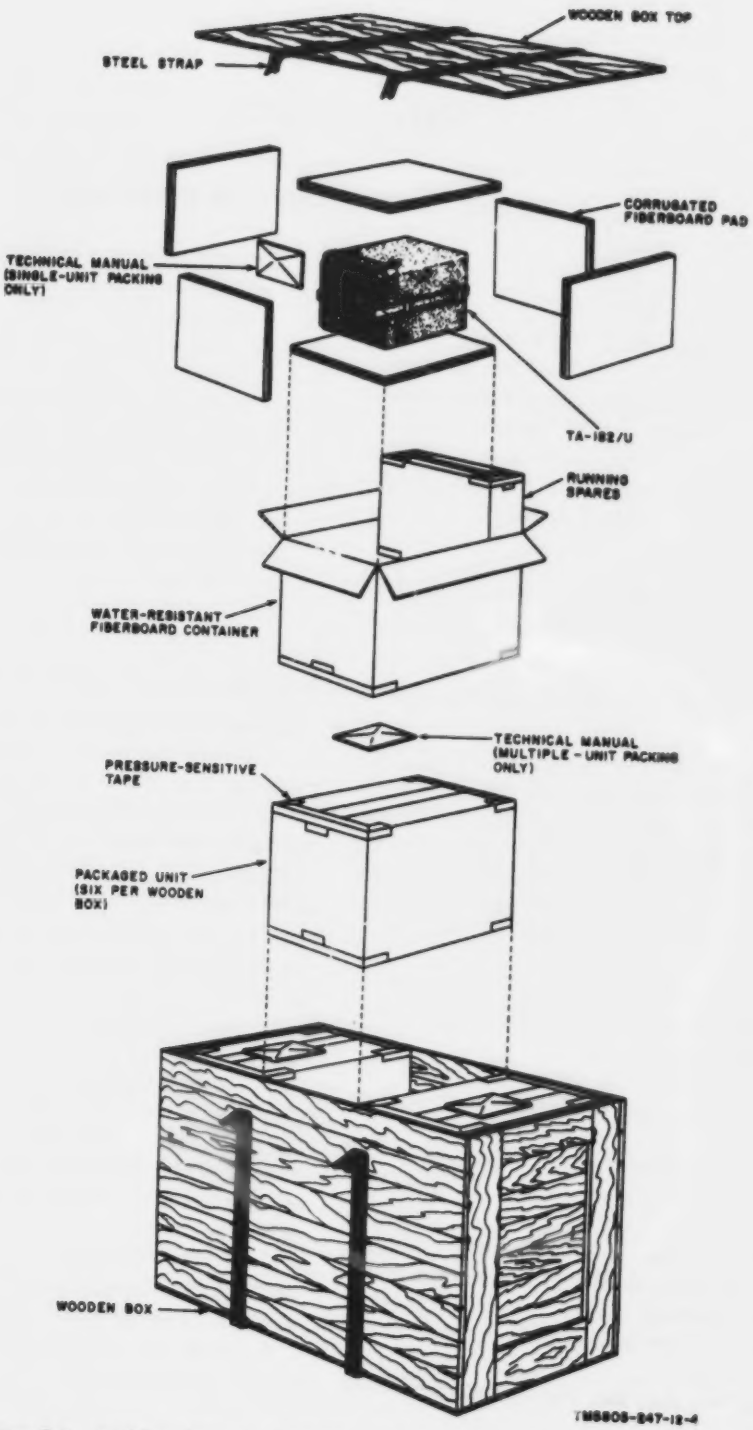



*Figure 3-1. Packing diagram, Converter, Telegraph-Telephone Signal TA-182/U.*

## Section II. INSTALLATION

### 3-3. Siting and Shelter Considerations

Normally, the TA-182/U is installed near the equipment to which it is connected, such as a switchboard or a central office set. When more than one TA-182/U is used, the TA-182/U's are either mounted in fabricated racks or stacked at the equipment site. Select the installation site based on the following consderations:

*Note.* If necessary, the TA-182/U can be located up to 5 miles from the associated switchboard or central office equipment. Connection is made from the TA-182/U loop connectors with field wire.

*a.* A power source of 115-volt alternating current (ac), 50 to 60 cycles per second (cps), must be be available at the TA-182/U installation site.

*b.* The TA-182/U should be installed in a shelter that provides adequate protection from dirt, dust, and excessive moisture.

*c.* The TA-182/U may be installed in a vehicle (para. 3-4).

### 3-4. Installation of TA-182/U

The TA-182/U can be installed on a level working area, a fabricated rack, or in a vehicle. Refer to *a*, *b*, *c*, or *d* below for appropriate installation procedures.

*a. Installation on Level Working Area.* When a mounting or rack is not provided, the TA-182/U can be installed on a workbench, an equipment case, or on the ground. Position the TA-182/U either on its tracks, or on the rear of its transit case, with the front panel facing upward.

*b. Installation in Prefabricated Rack.* When two or more equipments are required for a particular installation, prefabricated racks are sometimes provided to accommodate the TA-182/U. These racks are usually lined with a cushioning material which may require the TA-182/U be removed from its case prior to installation. Removal of the front panel and chassis assembly from the case is to be performed by the organizational maintenance personnel.

*c. Installation in Mounting MT-791/U or MT-791A/U.* Either Mounting MT-791/U (fig. 6-1) or Mounting MT-791A/U (not shown) can be used when the TA-182/U is mounted in a vehicle or on a workbench. Secure the TA-182/U in *either* mounting as described in (1) through (5) below.

(1) Check to see that the mounting and its grounding strap are securely installed and connected to ground.

(2) Push in on the locking handles on the front of the mounting.

(3) Unlatch and raise the cover assembly of the TA-182/U, and place the tracks of the converter case (fig. 1-1) into the grooves in the mounting (fig. 6-1).

(4) Pull the locking handles on the mounting forward. Make sure that the TA-182/U is locked securely in place.

(5) To remove the TA-182/U from the mounting, push in on the locking handles, and lift the TA-182/U from the mounting.

*d. Installation in Rack, Electrical Equipment MT-1278/U* (fig. 6-2).

(1) Remove the carrying sling from the TA-182/U (fig. 1-1).

(2) Fold the carrying sling (approximately 4-inch folds) and tie it with string.

(3) Release the spring-lock fasteners and swing open the cover assembly.

(4) Remove the fuses from the spare fuseholder and store them with the other running spares.

(5) Pry open the metal tabs on the cover assembly luggage catches which are secured to the spring-lock faseners on the converter case, and separate the cover assembly from the converter case.

(6) Unbuckle the cover assembly retaining strap on the MT-1278/U (fig. 6-2).

(7) Insert the folded carrying sling into the carrying sling bracket.

(8) Place the TA-182/U cover assembly in the cover assembly bracket with the TA-182/U luggage catches toward the rear of the MT-1278/U, and tighten the retaining strap.

*Note.* Make sure that the cover assembly is between the extended carrying sling brackets to which each end of the cover assembly retaining strap is secured.

(9) Use a screwdriver to turn the locking screws on the MT-1278/U fully counterclockwise.

(10) Place the TA-182/U tracks in the grooves in the MT-1278/U.

(11) Push the TA-182/U toward the rear of the MT-1278/U until the tracks are firmly engaged by the clamps.

(12) Turn the locking screws clockwise until each locking clamp is snug against the front of the tracks on the TA-182/U.

***Caution:*** **Do not overtighten the locking screws.**

(13) Connect the MT-1278/U power cord connector plug to a 115-volt ac 50- to 60-cps power source capable of supplying 160 watts of power.

(14) Connect the TA-182/U power cord connector plug to the appropriate convenience outlet on the MT-1278/U. Coil the TA-182/U power cord slack and place it on top of the converter case.

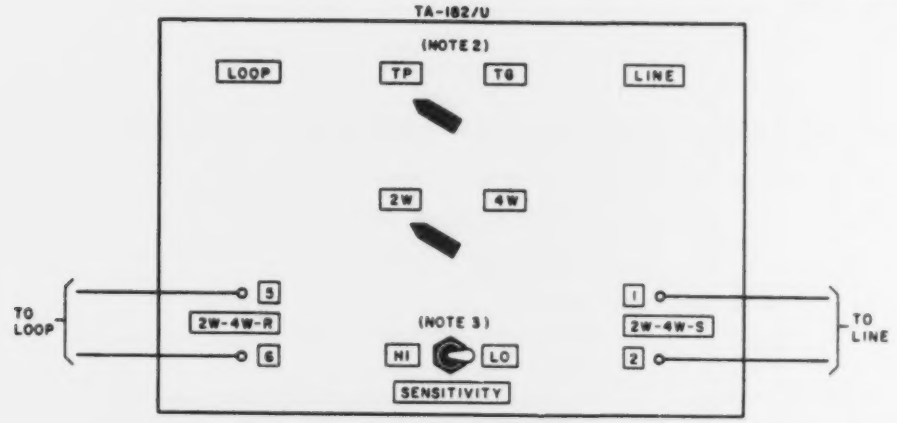
## 3-5. Connections and Control Settings

***Caution:*** **Depress the appropriate stop before operating the TP-TG switch (fig. 4-1).**

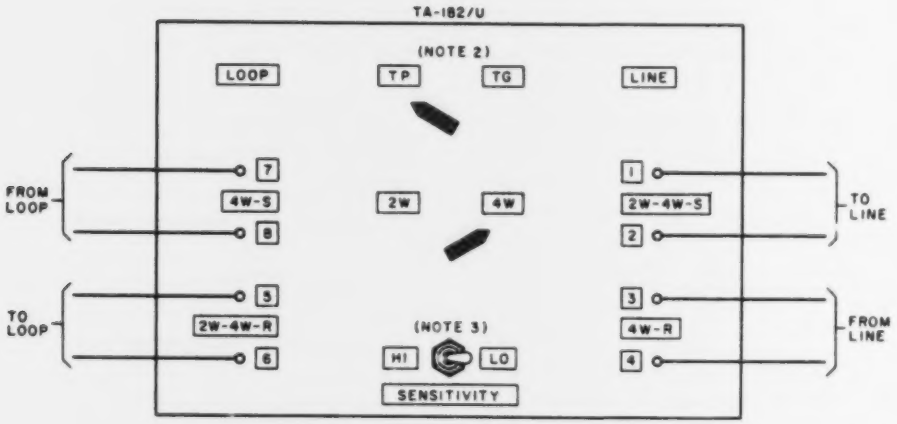
*a. Two-Wire Operation.* Connect the TA-182/U and operate the controls as shown on A, figure 3-2.

*b. Four-Wire Operation.* Connect the TA-182/U and operate the controls as shown on B, figure 3-2.

*Note.* The function of each control of the TA-182/U is described in paragraph 4-1.




A. TWO-WIRE OPERATION




B. FOUR-WIRE OPERATION

NOTES:
1. [ ] INDICATES PANEL MARKINGS
2. OPERATE [TP] [TG] SWITCH TO POSITION THAT CORRESPONDS TO TYPE OF OPERATION.
3. OPERATE [SENSITIVITY] SWITCH TO:
   [LO] IF LINE LOSS IS LESS THAN 25 DBM
   [HI] IF LINE LOSS IS BETWEEN 25 DBM AND 45 DBM.

TM5805-247-12-6

*Figure 3-2. Converter, Teleyraph-Telephone Signal TA-182/U, connections and control settings.*

# CHAPTER 4

# OPERATING AND OPERATOR'S MAINTENANCE INSTRUCTIONS

## Section I. OPERATION

### 4-1. Controls

(fig. 4-1)

The TA-182/U controls and settings are as follows:

| Control | Function |
|---|---|
| TP-TG switch | Arranges the TA-182/U for transmission and reception of either telephone or telegraph ringing signals. Stops are provided to prevent accidental operation of the switch.<br>*Sw position* — *Ringing signal*<br>TP — 1,600 cps (telephone)<br>TG — 1,225 cps (telegraph) |
| 2W-4W switch | Arranges the TA-182/U for either two-wire or four-wire operation.<br>*Sw position* — *External circuit*<br>2W — Two-wire<br>4W — Four-wire |
| SENSITIVITY switch. | Changes the sensitivity of the TA-182/U to compensate for variations of the ringing-signal input voltage.<br>*Sw position* — *Function*<br>HI — Increases sensitivity to weak ringing signals.<br>LO — Reduces sensitivity to strong signals. |

### 4-2. Operation

The TA-182/U can be used in a number of systems applications as indicated in TM 11-5805-254-15. However, once the TA-182/U has been installed (para. 3-4), and connections and controls have been arranged to satisfy the requirements of a particular system (para. 3-5), their arrangement is not normally changed until the system is changed.

*Note.* Prior to applying power to the TA-182/U, check it to see that the controls and connections are arranged properly for the required operation.

*a. Starting Procedure.* The TA-182/U does not have a power on-off switch. To apply 115-volt-ac, 50- to 60-cps power to the unit, connect the power cord connector plug to a 115-volt-ac, 50- to 60-cps, single-phase power source.

*b. Operating Procedure.* No operating procedures are required. The TA-182/U operates automatically.

*Note.* If excessive fading occurs during operation with the SENSITIVITY switch on the LO position, operate the switch to the HI position (para. 4-1).

*c. Stopping Procedures.* To deenergize the TA-182/U, remove the power cord connector plug from the power source.

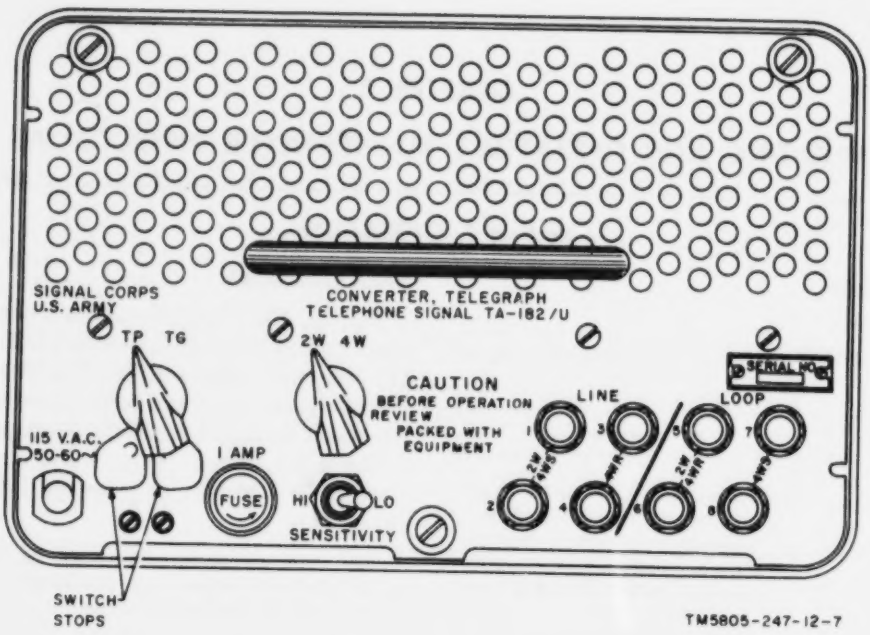



*Figure 4-1. Converter, Telegraph-Telephone Signal TA-182/U, front panel.*

## 4-3. Operation Under Unusual Conditions

*a. Cold Climates.*

(1) Keep the TA—182/U. warm and dry. Operate the TA—182/U continuously if possible; the electron tubes will furnish some heat.

(2) When the TA—182/U has been exposed to low temperatures and then is brought into a warm room, condensation will form on the interior and exterior surfaces. Wait until all condensation has evaporated before placing the TA—182/U into operation.

*b. Hot Dry Climates.* Sand, dust, and the effects of strong sunlight may damage the TA—182/U.

(1) Protect the TA—182/U from sand, dust, and strong sunlight. Clean and dust the exterior surfaces frequently.

(2) Whenever the installation permits, keep the TA—182/U in its case to keep sand and dust out of the chassis components.

*c. Warm Damp Climates.* Excessive humidity and fungus may damage the TA—182/U. Remove moisture and fungus from the exterior surfaces with a lint-free cloth.

# Section II. OPERATOR'S MAINTENANCE INSTRUCTIONS

## 4-4. Scope of Operator's Maintenance

The maintenance duties assigned to the operator of the TA-182/U are listed below, together with a reference to the paragraphs covering the specific maintenance functions.

*a.* Operator's preventive maintenance checks and services (para. 4-8).

*b.* Fuse replacement (para. 4-9).

## 4-5. Preventive Maintenance

*Note.* Refer to TM 750-244-2 for proper procedures for destruction of this equipment to prevent enemy use.

*a.* Operator/crew preventive maintenance is the systematic care, servicing and inspection of equipment to prevent the occurrence of trouble, to reduce downtime, and to maintain equipment in serviceable condition. To be sure that your

signal converter is always ready for your mission, you must do scheduled preventive maintenance checks and services (PMCS).

(1) BEFORE OPERATION, perform your B PMCS to be sure that your equipment is ready to go.

(2) When an item of equipment is reinstalled after removal, for any reason, perform the necessary B PMCS to be sure the item meets the readiness reporting criteria.

(3) Use the ITEM NO. column in the PMCS table to get the number to be used in the TM ITEM NO. column on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) when you fill out the form.

*b.* Routine checks like CLEANING, PRESERVATION, DUSTING, WASHING, CHECKING FOR FRAYED CABLES, STOWING ITEMS NOT IN USE, COVERING UNUSED RECEPTACLES, CHECKING FOR LOOSE NUTS AND BOLTS AND CHECKING FOR COMPLETENESS are not listed as PMCS checks. They are things that you should do any time you see they must be done. If you find a routine check like one of those listed in your PMCS, it is because other operators reported problems with this item.

*Note.* When you are doing any PMCS or routine checks, keep in mind the warnings and cautions.

*Warnings.* **Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.**

**Compressed air is dangerous and can cause serious bodily harm if protective means or methods are not observed to prevent a chip or particle (of whatever size) from being blown into the eyes or unbroken skin of the operator or other personnel. Goggles must be worn at all times while cleaning with compressed air. Compressed air shall not be used for cleaning purposes except where reduced to less than 29 pounds per square inch gage (psig) and then only with effective chip guarding and personnel protective equipment. Do not use compressed air to dry parts when trichlorotrifluoroethane has been used.**

*Notes:* The PROCEDURES column in your PMCS charts instruct how to perform the required checks and services. Carefully follow these instructions and, if tools are needed or the chart so instructs, get organizational maintenance to do the necessary work.

If your equipment must be in operation all the time, check those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

*c.* Deficiences that cannot be corrected must be reported to higher category maintenance personnel. Records and reports of preventive maintenance must be made in accordance with procedures given in TM 38-750.

### 4-6. Operator/Crew Preventive Maintenance Checks and Services (Para 4-8)

Perform before operation PMCS if you are operating the item for the first time.

Paragraph 4-7 deleted.

## 4-8. Operator/Crew Preventive Maintenance Checks and Services Chart

B — Before

| Item No. | Interval B | Item to be Inspected | Procedures — Check for and have repaired or adjusted as necessary | Equipment is not Ready/Available If: |
|---|---|---|---|---|
| | | | *Warning.* **Do not touch the LOOP binding posts on the TA-182/U when the system is in operation. Ringing signals of 90 volts may be present on these binding posts.** | |
| 1 | * | TA-182/U | If the TA-182/U is not connected to an operating communications system perform the following checks:<br>a. Ringing test TP position 2W.<br>b. Ringing test TG position 2W.<br>c. Ringing test 4W local to distant telephone.<br>d. Ringing test 4W distant to local telephone. | Telephone set fails to ring or speech level low or unintelligible |
| 2 | * | Tubes** | Have Organizational Maintenance test replacement tubes prior to use in equipment. | If replacement tube is bad and no replacement available |

*Do this check before each deployment to a mission location. This will permit any existing problems to be corrected before the mission starts. The check does not need to be done again until redeployment.

** Do this check when replacement of tube is necessary.

## 4–9. Fuse Replacement

(fig. 4-1)

*a.* Depress the fuse cap toward the front panel and turn it counterclockwise one-quarter turn, and pull the fuse cap out of the fuseholder.

*b.* Remove the defective fuse from the fuse cap and replace it with a new fuse.

*c.* Replace the fuse cap with new fuse into the fuseholder. Rotate the fuse cap one-quarter turn clockwise to lock it in place.

*d.* Apply power to the TA-182/U (para. 4-2). If the replacement fuse immediately burns out request higher level maintenance.

Paragraph 4—10 deleted.

# CHAPTER 5

# ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

## Section I. GENERAL

### 5-1. Scope of Organizational Maintenance

*a.* Paragraphs 5-2 through 5-10 contain instructions covering organizational maintenance of the TA-182/U and include instructions for performing preventive maintenance services and repair functions to be accomplished by the organizational repairman.

*b.* Organizational maintenance on the TA-182/U consists of the following:

(1) Preventive maintenance (paras. 5-3 and 5-4).
(2) Visual inspection (para. 5-6).
(3) Touchup painting (para. 5-5).
(4) Troubleshooting (paras. 5-7 through 5-9).
(5) Repair (para. 5-10).

### 5-2. Tools, Materials, and Test Equipment

*a.* Trichlorotrifluoroethane (NSN 6850-00-105-3084).

*b.* Lint-free cloth.

*c.* Brush, paint, ½ inch width (NSN 8020-00-262-9084).

*d.* Enamel, Lusterless, O.D., 1 gal. (NSN 8010-00-297-0560) if appropriate.

*e.* Enamel, Semigloss, O.D., 1 qt. (NSN 8010-00-844-8088) if appropriate.

*f.* Tool Equipment TE-123.

*g.* Multimeter AN/URM-105 (or equivalent).

*h.* Test Set, Electron Tube TV-7/U (or equivalent).

### 5-3. Organizational Preventive Maintenance

Organizational preventive maintenance procedures are designed to help maintain equipment in serviceable condition. They include items to be checked and how to check them. These checks and services, described in paragraph 5-4, outline inspections that are to be made at specific quarterly (Q) intervals.

### 5-4. Organizational Preventive Maintenance Checks and Services Chart

Q — Quarterly

| Item No. | Interval Q | Item to be Inspected | Procedures |
|---|---|---|---|
| 1 | • | Chassis Parts | Inspect wiring, wiring harness, capacitors, resistors, transformers and terminal boards for looseness, burns, swelling or other signs of deterioration or overheating. |

### 5-5. Touchup Painting

Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of paint on the bare metal to protect it from further corrosion. Refer to the applicable cleaning and refinishing practices specified in TB SIG 364. Refer to paragraph 5-2 and SB 11-573 for applicable Federal stock numbers.

## Section II. TROUBLESHOOTING AND REPAIR

### 5-6. Visual Inspection

Before attempting to operate the A-182/U which has been reported defective, inspect it. This action will save repair time and may also avoid further damage to the unit. Replace defective parts (para. 5-10) or request higher level maintenance, as required. If equipment repairs are made as a result of visual inspection, request an operational test by the system control officer before placing the TA-182/U back into service.

### 5-7. Troubleshooting

*a. General.* Troubleshooting of the TA-182/U is based on the operational check contained in the quarterly checks and services chart. To troubleshoot the equipment, perform the operational check (item 14) in the organizational quarterly preventive maintenance checks and services chart (para. 5-4). If normal operation is not obtained, refer to the troubleshooting chart (*b* below). Perform the corrective measures in the troubleshooting chart. If the suggested corrective measure does not restore normal equipment operation, higher level maintenance is required. Note on the repair tag which corrective measures were taken.

*b. Troubleshooting Chart.* When using the troubleshooting chart, refer to figure 5-1 for parts locations. To remove the TA-182/U front panel and chassis assembly from the converter case, refer to paragraph 5-10.

| Symptom | Probable trouble | Corrective measure |
|---|---|---|
| a. None of the electron tubes light when power is applied to the TA-182/U. | (1) Defective power cord or power cord connector plug. | (1) Perform the following checks in sequence. Use the AN/URM-105 for continuity checks.<br>(a) Inspect the connector plug for evidence of a short or open circuit at the terminal screw connections of the power cable conductors; required.<br>(b) Check fuse.<br>*Note.* A blown fuse in the ac power source indicates a shorted circuit.<br>(c) Remove fuse F1 and check for continuity between the prongs of the ac power connector plug of the TA-182/U. Continuity should not exist (infinite resistance). Request higher level maintenance if continuity does exist.<br>(d) Check for continuity from each prong of the ac power cord connector plug to chassis ground; continuity should not exist (infinite resistance). If continuity exists, refer the TA-182/U to higher level maintenance. |
| | (2) Defective filament ac voltage supply wiring or connection. | (2) Inspect the wiring and connections at pins 4, 5, and 9 of tube V5 and at terminals 8 and 9 of transformer T6. Resolder loose connections. Request higher level maintenance if wiring is defective. |
| | (3) Defective transformer T6. | (3) Measure the voltage and resistance at pins 4, 5, and 9 of tube V5 (para. 5-9); record abnormal readings and request higher level maintenance. |
| b. Some electron tube filaments light but others do not. | (1) Defective wiring or connections, or electron tubes. | (1) Perform the following:<br>(a) Inspect wiring and connections at unlighted tube sockets. Resolder loose connections. Request higher level maintenance if wiring is defective. |

| Symptom | Probable trouble | Corrective measure |
|---|---|---|
| | | (b) Check suspected electron tubes (para. 5-8); replace as required. |
| | | (c) Measure the voltage and resistance at unlighted tubes (para. 5-9); record abnormal reading and refer to higher level maintenance. |
| c. No vf ringing signal output when 20-cps ringing signal is applied. | (1) Improper switch settings or binding post connections. | (1) Check switch settings and binding post connections for proper arrangement according to installation requirements (para. 3-4). |
| *Note.* Vf output tone can be heard by connecting Headset TS-190A/U to appropriate LINE binding posts. | (2) 20-cps ringing signal input is too low to activate the TA-182/U (below 25-volt ac minimum input level). | (2) Measure the 20-cps input ringing signal on the appropriate LOOP binding posts with the AN/URM-105; it should indicate between 25 and 90 volts ac. If the correct indication is not obtained, refer TA-182/U to higher level maintenance. |
| | (3) Defective electron tube V6. | (3) Check V6 (para. 5-8); replace it if defective. |
| | (4) Defective sending circuit. | (4) Make voltage and resistance measurements at V6 tube socket (para. 5-9); record abnormal reading and request higher level maintenance. |
| | (5) Dirty or defective 2W-4W switch S1 contacts. | (5) Inspect 2W-4W switch S1 and check its operation; clean contacts if dirty; request higher level maintenance if defective. |
| d. No 20-cps ringing signal output when vf ringing signal is received. | (1) Improper switch settings or binding post connections. | (1) Check switch settings and binding post connections for proper arrangement according to installation requirements (para. 3-4). |
| *Note.* Vf input tone can be heard by connecting Headset TS-190A/U to appropriate LINE binding posts. | | |
| | (2) Incorrect input vf ringing signal frequency. | (2) Request that switch settings of TA-182/U at distant terminal be checked for proper arrangement. |
| | (3) Defective incandescent lamp E9. | (3) Replace lamp E9. |
| | (4) Defective electron tube V1, V2, V5, or semiconductor diodes V3, V4, V7, V8. | (4) Check electron tubes V1, V2, and V5 (para. 5-8) and semiconductor diodes (para. 5-8); replace as required. |
| | (5) Defective receiving circuit. | (5) Make voltage and resistance measurements at tube and semiconductor sockets (V1 through V5, and V7, V8 (para. 5-9). Record abnormal readings and request higher level maintenance. |
| | (6) Relay K3 or static ringing generator E10 defective. | (6) Request higher level maintenance. |
| e. 20-cps ringing signal output is less than 90 volts ac ±10%, when measured across appropriate LOOP binding posts. | (1) Defective semiconductor diode V8. | (1) Check semiconductor diode V8 (para. 5-9); replace if defective. |
| | (2) Incorrective supply voltage to static ringing generator E10. | (2) Make voltage and resistance measurements at semiconductor V8 socket (para. 5-9); record abnormal readings and request higher level maintenance. |
| | (3) Defective static ringing generator E10. | (3) Request higher level maintenance. |
| f. Vf ringing signal output when TP-TG switch is in one position but no output when switch is in other position. | Dirty or defective TP-TG switch contacts. | Inspect TP-TG switch and check its operation. Clean switch contacts if dirty; request higher level maintenance if defective. |
| g. TA-182/U produces false ringing signals. | (1) Defective semiconductor diode V4. | (1) Check semiconductor diode V4 (para. 5-9); replace if defective. |
| | (2) Defective guard detector circuit. | (2) Make voltage and resistance measurements at V4 socket (para. 5-9); record abnormal readings and request higher level maintenance. |

## 5-8. Tube Testing and Replacement

***Caution:*** **Never rock or rotate an electron tube when removing it from a socket; pull it straight out with a tube puller.**

***Warning:*** **Electron tubes and tube shields become hot after several minutes of operation. Wait until they become cool before removing.**

*a. Using TV-7/U.* Remove and test one tube at a time; use the TV-7/U. Discard a tube only if its defect is obvious or if the TV-7/U shows it to be defective. Before testing the next tube, replace the original tube, or install a new tube if required.

*b. Tube Substitution Method.* Replace a suspected tube with a new one. If this does not correct the trouble, remove the new tube and replace the original tube. Repeat this procedure with each suspected tube until the defective tube is located.

## 5-9. Voltage and Resistance Measurements

*a.* Use Tube Socket Adapter Kit MX-1258/U (*c* below) and Multimeter AN/URM-105 to make tube-socket voltage and resistance measurements (fig. 5-2).

***Caution:*** **To protect the ohmmeter, disconnect the TA-182/U power and LINE and LOOP connections and discharge capacitors C5, C26, and C33 before making resistance measurements.**

*b.* When abnormal measurements are obtained, record the pertinent facts (tube designation, pin numbers, measurement obtained, etc.) on a trouble ticket and refer the equipment to higher level maintenance personnel for repair.

*c.* To use Tube Socket Adapter Kit MX-1258/U, proceed as follows:

(1) Press the tube shield down, twist it counterclockwise, and remove it from the socket.

(2) Use a tube puller and pull the tube or semiconductor diode (as applicable) straight out of the socket on which measurements are to be made.

(3) Select the test adapter from the MX-1258/U which corresponds to the size and number of pins of the tube or semiconductor diode removed. Insert this adapter into the tube or semiconductor diode socket.

(4) Insert the removed tube or semiconductor diode into the test adapter.

(5) Make the desired measurement by connecting the meter probe to the terminal on the test adapter which corresponds to the pin number of the tube or semiconductor diode.

(6) When the tests are completed, remove the test adapter and replace the tube or semiconductor diode (as applicable), and the shield.

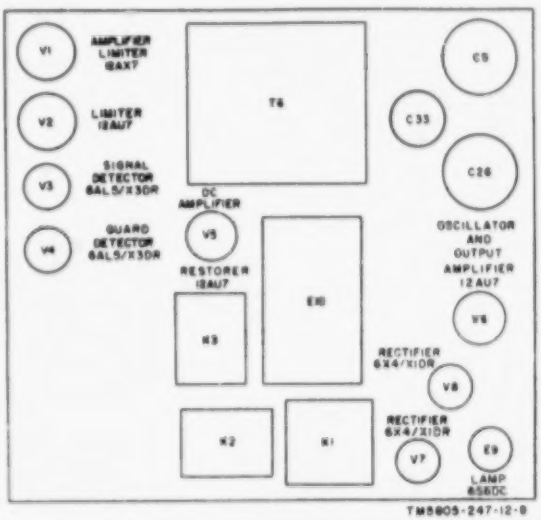



*Figure 5-1. Parts location diagram.*

## 5-10. Repair Procedures

*a. Extent of Repairs.* Organizational repair of the TA-182/U consists of the replacement of running spares (app. II), as required, converter case and cover assembly, control knobs, power control connector plug, and electron tube shields. To replace an electron tube, semiconductor diode, tube shield, incandescent lamp (bayonet type), or converter case and cover assembly, remove the front panel and chassis assembly from the converter case (*b* below). Refer to figures 1-1 and 5-1 for location of parts.

*b. Removal and Replacement of Front Panel and Chassis Assembly.*

(1) Disconnect the power cord connector plug from the alternating current source.

(2) Disconnect the external circuit wires from the LOOP and LINE binding posts. Tag or otherwise identify the external circuit wires.

***Warning:*** **Be careful not to contact the LOOP binding posts when the TA-182/U is connected into an operating system. Ringing signals of 90 volts ac may exist on these binding posts.**

(3) Loosen the three quick-release screws on the front panel and pull the front panel and chassis assembly out of the case.

(4) After repairs are completed, install the front panel and chassis assembly in the case, tighten the three quick-release screws on the front panel, and reconnect the TA-182/U for normal operation ((1) above).

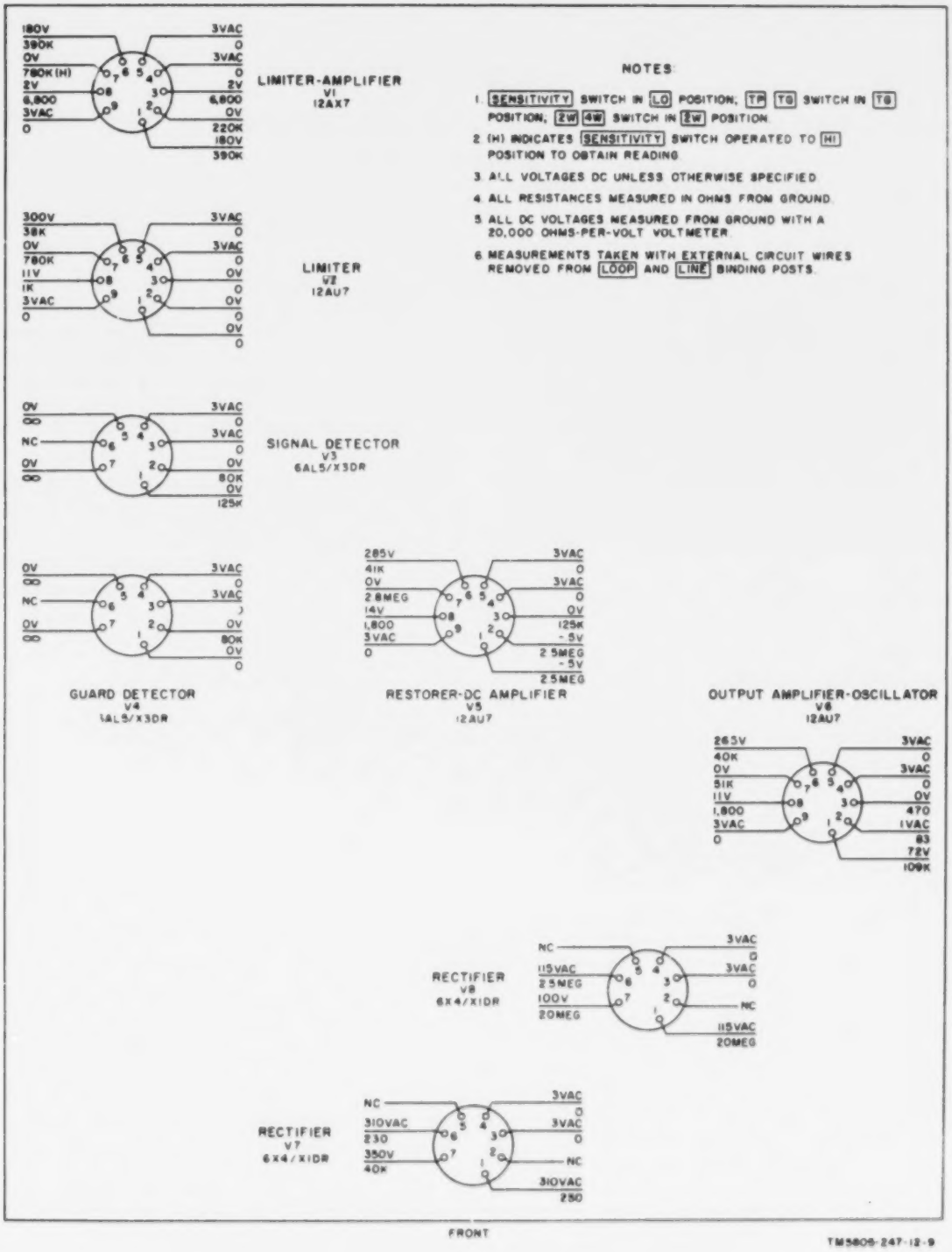



*Figure 5-2. Tube and semiconductor diode socket voltage and resistance diagram for TA-182/U.*

# CHAPTER 6

# MATERIEL USED IN CONJUNCTION WITH CONVERTER, TELEGRAPH-TELEPHONE SIGNAL TA-182/U

## 6-1. Mounting MT-791/U or MT-791A/U (fig. 6-1)

Mounting MT-791/U (fig. 6-1) or MT-791A/U (not shown) can be used when the TA-182/U is mounted in a vehicle or on a workbench. Procedures for installing the TA-182/U in *either* mounting are covered in paragraph 3-4*c*.

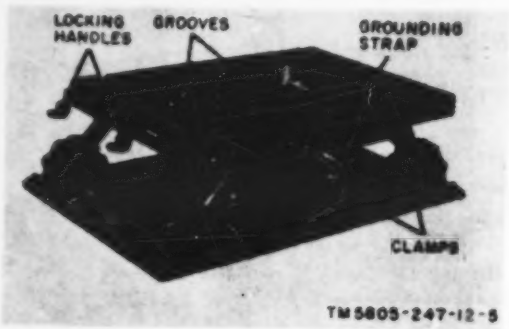



*Figure 6-1. Mounting MT-791/U.*

## 6-2. Rack, Electrical Equipment MT-1278/U (fig. 6-2)

Rack, Electrical Equipment MT-1278/U (Federal stock No. 5805-333-9459) can be used for mounting a maximum of four TA-182/U's. Procedures for installing the TA-182/U in the MT-1278/U are covered in paragraph 3-4*d*.

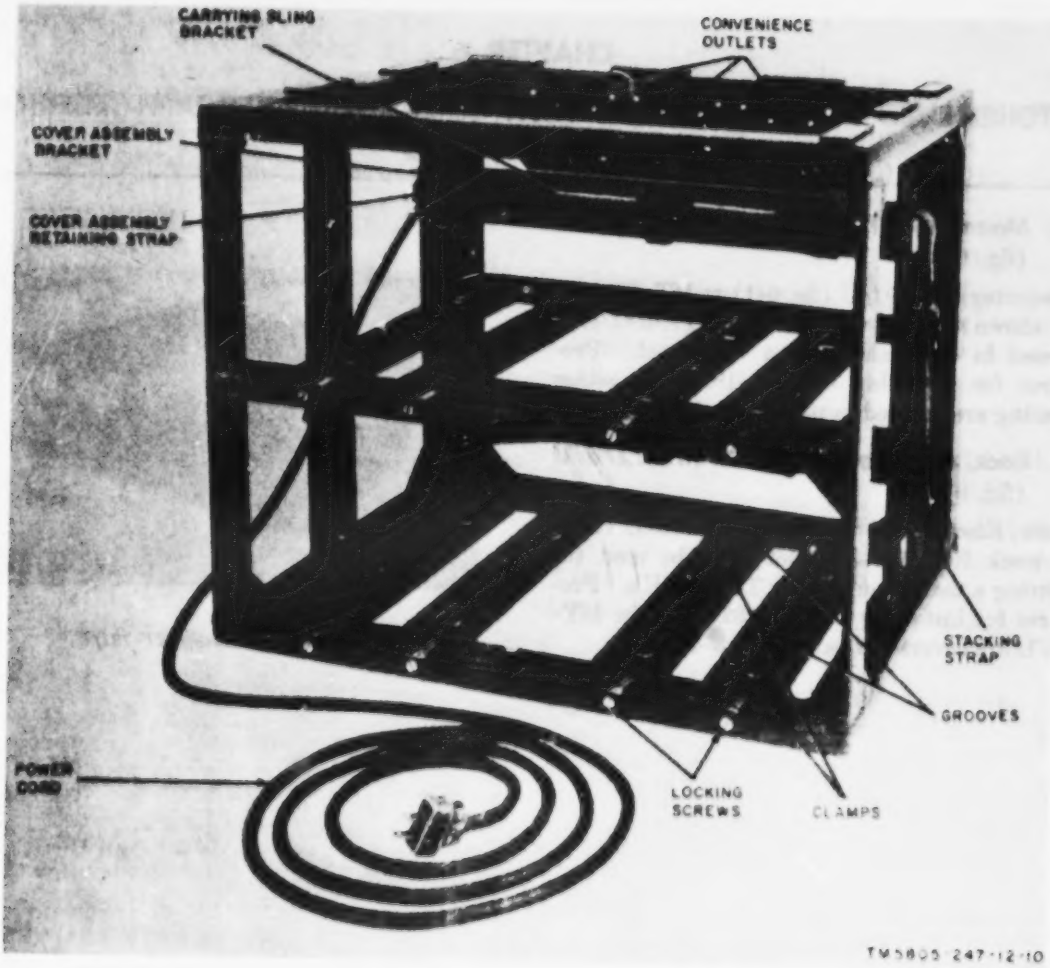



*Figure 6-2. Rack, Electrical Equipment MT-1278/U.*

# CHAPTER 7

# BLOCK DIAGRAM ANALYSIS

## 7-1. General
(fig. 8-1)

Converter, Telegraph-Telephone Signal TA-182/U is connected in two-wire and four-wire telephone and voice-frequency teletypewriter circuits (para. 3-5 and TM 11-5805-254-15) that will not pass 20-cps ringing signals. The TA-182/U converts 20-cps ringing signals received from the loop to vf ringing signals for transmission over the line. The TA-182/U also converts vf ringing signals received from the line to 20-cps ringing signals for transmission over the loop.

*a.* The input-output circuit (para. 7-2) provides through-connections for transmission and reception of telephone (speech) and vf teletypewriter signals.

*b.* The sending circuit (para. 7-3) converts the 20-cps ringing signals into either a 1,225- or 1,600-cps vf ringing signal.

*c.* The receiving circuit (para. 7-4) converts either a 1,225- or 1,600-cps vf ringing signal into a 20-cps ringing signal.

*d.* The power supply circuit (para. 7-5) provides the operating voltages for the sending and receiving circuits.

## 7-2. Input-Output Circuit
(fig. 8-1)

*a. Line Operating.* The input-output circuit of the TA-182/U can be arranged for two-wire or four-wire operation.

(1) *Two-wire operation.* When 2W-4W switch S1 is operated to the 2W position, the TA-182/U is arranged for two-wire operation. The loop transmitting and receiving circuits are connected to the LOOP 2W-4W-R binding posts and the line receiving and transmitting circuits are connected to the LINE 2W-4W-S binding posts.

(2) *Four-wire operation.* When 2W-4W switch S1 is operated to the 4W position, the TA-182/U is arranged for four-wire operation. The loop transmitting circuit is connected to the LOOP 4W-S binding posts, and the loop receiving circuit is connected to the LOOP 2W-4W-R binding posts. The line transmitting circuit is connected to the LINE 2W-4W-S binding posts, and the line receiving circuit is connected to the LINE 4W-R binding posts.

*b. Vf Signal Path.* Vf signals between zero and approximately 3,000 cps (other than 20 cps and 1,225 or 1,600 cps) are routed through the input-output circuit of the TA-182/U as follows:

(1) *Two-wire operation.* Vf signals applied from the loop and line circuits (*a*(1) above) are routed between the LOOP and LINE binding posts through the contacts of 2W-4W switch S1 and contacts 1 and 2 of relay K2.

(2) *Four-wire operation.* Vf signals applied from the loop transmitting circuit (*a*(2) above) are routed between the LOOP 4W-S binding posts and the LINE 2W-4W-S binding posts through the contacts of 2W-4W switch S1 and contacts 1 and 2 of relay K2. Vf signals applied from the line receiving circuit (*a*(2) above) are routed between the LINE 4W-R binding posts and the LOOP 2W-4W binding posts through the contacts of 2W-4W switch S1.

*c. 20-Cps Signal Path.* Ringing signals of 20-cps applied from the loop transmitting circuit are routed through the contacts of 2W-4W switch S1 to relay K1. Relay K1 operates and permits the direct current (dc) voltage from rectifier V7 to operate relay K2. Contacts 1 and 2 of relay K2 open the transmitting path from the LOOP binding posts to the LINE binding posts and contacts 3 and 2 of relay K2 close and permit the output of the sending circuit (para. 7-3) to be applied to the LINE 2W-4W-S binding posts.

*d. Vf Ringing Signal Path.* Vf ringing signals (1,600 or 1,225 cps) applied to the LINE binding

posts (*a* above) are routed through the contacts of 2W-4W switch S1 to the receiving circuit (para. 7-4). The receiving circuit responds to the signal and transmits a 20-cps ringing signal to the LOOP 2W-4W-R binding posts.

### 7-3. Sending Circuit
(fig. 8-1)

When TP-TG switch S2 is operated to TP, oscillator V6A generates a 1,600-cps telephone ringing signal. When TP-TG switch S2 is operated to TG, oscillator V6A generates a 1,225-cps teletypewriter ringing signal. The vf ringing signal from oscillator V6A is applied to output amplifier V6B. When a 20-cps ringing signal, from the LOOP, operates relay K2 (para. 7-2*c*), the vf ringing signal from output amplifier V6B is applied to the line through contacts 3 and 2 of relay K2 and the LINE 2W-4S binding posts.

### 7-4. Receiving Circuit
(fig. 8-1)

Vf ringing signals (1,225 or 1,600 cps) are applied from the receiving line circuit (para. 7-2*d*) through limiter-amplifiers V1A and V1B, and limiter V2 to the discriminator circuit. When SENSITIVITY switch S3 is operated to HI, the limiter-amplifier V1B circuit responds (is sensitive) to signals between zero and approximately −50 decibels, referred to 1 milliwatt in 600 ohms (dbm). When SENSITIVITY switch S3 is operated to LO, the circuit responds to signals between 0 and −30 dbm. When TP-TG switch S2 is operated to TP, limiter-amplifier V1A filters all frequencies but 1,600-cps vf ringing signals; transformer T2 in the discriminator detects the 1,600-cps vf ringing signals. When TP-TG switch S2 is operated to TG, the circuit responds to 1,225-cps ringing signals. The output of transformer T2 and signal detector-doubler V3 is applied through the time delay network and restorer V5A to dc amplifier V5B. Dc amplifier V5B conducts and causes relay K3 to operate. Contacts 5 and 6 of relay K3 close and apply dc from rectifier V8 to static ringing generator E10. Static ringing generator E10 operates and applies a 20-cps ringing signal to the loop through ballast lamp E9, contacts 3 and 2 of relay K3, and the LOOP 2W-4W-R binding posts. The time delay network is provided at the output of the discriminator to prevent 1,225 or 1,600-cps ringing signals that are less than one-half second in duration from operating relay K3. A guard circuit consisting of limiter-amplifier V1B limiter V2, transformer T3, and guard detector-doubler V4, prevents relay K3 from operating when signals other than 1,225 or 1,600 cps are applied to the receiving circuit.

### 7-5. Power Supply Circuit
(fig. 8-1)

Input supply voltage of 115 volts ac 50 to 60 cps is applied through fuse F1 (1 ampere) to transformer T6 which provides proper operating voltages for rectifiers V7 and V8 and provides 6.2-volt ac filament voltages for all tubes. Rectifier V7 provides B+ supply dc voltage for tubes V1, V2, V5, and V6; it also supplies dc voltage to operate relay K2 when relay K1 is operated (para. 7-2*c*). Rectifier V8 supplies dc voltage to static ringing generator E10 when relay K3 is operated (para. 7-4).

# CHAPTER 8

# SHIPMENT AND LIMITED STORAGE

## Section I. SHIPMENT AND LIMITED STORAGE

### 8-1. General

The exact procedure for repacking depends on the conditions under which the TA-182/U is to be shipped or stored. Use the original shipping containers, if available, for repacking the equipment. Use the procedures given in paragraph 8-4 as a guide when repacking and repackaging the TA-182/U. Refer to paragraph 3-1 for information concerning the original packaging of the equipment.

### 8-2. Disassembly for Shipment or Limited Storage

*a. Disassembly.* Use the procedures in (1) through (4) below to prepare a TA-182/U for shipment or limited storage.

(1) Disconnect the TA-182/U power and signal connections and remove the TA-182/U from its installed position.

(2) Wind and store the power cord against the front panel.

(3) Secure the cover assembly into place with the spring-lock fasteners.

(4) Assemble the running spares and technical manuals for each TA-182/U to be packed.

*Note.* If the TA-182/U is being moved from one site for immediate reinstallation at another site by organizational personnel, the running spares ((4) above) may be left in the components or containers in which they are normally stored. Make sure that they are properly protected from breakage or loss during transit.

*b. Repacking.* The repacking of a TA-182/U for shipment or limited storage is performed by organizational maintenance personnel. Use the materials specified in paragraph 8-3 and follow the procedures given in paragraph 8-4.

### 8-3. Materials Required for Repacking

The following materials are required for repacking Converter, Telegraph-Telephone Signal TA-182/U. For applicable National stock numbers, refer to SB 38-100.

| Material | Quantity (approx) |
|---|---|
| Waterproof wrapping paper | 10 sq ft. |
| Corrugated single-face fiberboard | 8 sq ft. |
| Pressure-sensitive waterproof tape, 3 in. width. | 10 ft length. |
| Gummed paper tape, 3 in. width | 15 ft length. |
| Filler material (paper or fiberboard) | As required. |

### 8-4. Repacking Instructions

*a. Packaging.*

(1) *Technical manuals.* Package the technical manuals within a bag fabricated from waterproof paper. Seal the seams of the bag with pressure-sensitive tape.

(2) *Running spares.*

(*a*) *Fuses.* Place the spare fuses in the clips provided inside the cover assembly (fig. 1-1).

(*b*) *Tubes and lamps.* Wrap each tube and lamp securely within two layers of corrugated fiberboard; secure the fiberboard wrapping with gummed paper tape.

(3) *Power cord and carrying sling.* Wind the power cord into a coil that can be stored against the front panel; wrap the coil in corrugated fiberboard and secure it with gummed paper tape. Close and secure the cover assembly and tighten the carrying sling; fold the slack end of the carrying sling and secure with cord or heavy string.

*b. Packing.*

(1) *Running spares package.* Wrap the spare tube and lamp packages with waterproof wrapping paper. Seal the seams of the package with pressure-sensitive tape and secure the package to one side of the TA-182/U with pressure-sensitive tape.

(2) *Wrapping.* Wrap the TA-182/U within

corrugated fiberboard and secure it with gummed paper tape. Secure the packaged technical manuals (*a*(1) above) to the top of the package with pressure-sensitive tape. Place the wrapped equipment within a close-fitting bag fabricated of waterproof wrapping paper and seal the seams of the bag with pressure-sensitive tape.

(3) *Shipping boxes.* When shipped in multiples of six units, pack the equipment in a wooden box. Refer to paragraph 3- and figure 3—1 to determine dimension of the required box.

(4) *Strapping.* When packed for intertheater shipment, apply steel straps girthwise to reinforce the wooden box.

(5) *Markings.* Mark each single unit or wooden box as prescribed in AR 220-10 and pertinent instructions in the shipment directive.

Section II deleted.

# APPENDIX I

## REFERENCES

The following is a list of applicable references available to the operator and organizational maintenance personnel of Converter, Telegraph-Telephone Signal TA-182/U.

| | |
|---|---|
| AR 220-10 | Preparation for Oversea Movement of Units. |
| AR 750-5 | Organization, Policies, and Responsibilities for Maintenance Operation. |
| DA Pam 108-1 | Index of Army Motion Pictures, Film Strips, Slides, and Phono-Recordings. |
| DA Pam 310-1 | Consolidated Index of Army Publications and Blank Forms. |
| SB 11-573 | Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment. |
| SB 38-100 | Preservation, Packaging and Packing Materials, Supplies, and Equipment Used by the Army. |
| SR 320-5 | Dictionary of United States Army Terms. |
| SR 320-50 | Authorized Abbreviations and Brevity Codes. |
| TB SIG 222 | Solder and Soldering. |
| TB SIG 364 | Field Instructions for Painting and Preserving Electronics Command Equipment. |
| TM 11-5805-254-15 | Operator's, Organizational, Field and Depot Maintenance Manual: Terminal, Telegraph-Telephone AN/TCC-14. |
| TM 11-6625-203-12 | Operator and Organizational Maintenance: Multimeter AN/URM-105, Including Multimeter ME-77/U. |
| TM 11-6625-274-12 | Operator and Organizational Maintenance: TV-7/U. |
| TM 38-750 | The Army Maintenance Management System (TAMMS). |
| TM 740-90-1 | Administrative Storage of Equipment. |
| TM 750-244-2 | Procedures for Destruction of Electronics Materiel to Prevent Enemy Use. |

# APPENDIX II
# BASIC ISSUE ITEMS LIST (BIIL)AND ITEMS TROOP INSTALLED OR AUTHORIZED LIST (ITIAL)

## Section I. INTRODUCTION

### A2-1. Scope

This appendix lists only basic issue items required by the crew/operator for installation, operation, and maintenance of Converter, Telegraph-Telephone Signal TA-182/U.

### A2-2. General

This Basic Issue Items and Items Troop Installed or Authorized List is divided into the following sections:

*a. Basic Issue Items List — Section II.* A list, in alphabetical sequence, of items which are furnished with, and which must be turned in with the end item.

*b. Items Troop Installed or Authorized List — Section III.* Not applicable.

### A2-3. Explanation of Columns

The following provides an explanation of columns found in the tabular listings:

*a. Illustration.* This column is divided as follows:

(1) *Figure Number.* Indicates the figure number of the illustration in which the item is shown.

(2) *Item Number.* Not applicable.

*b. Federal Stock Number.* Indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

*c. Part Number.* Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements, to identify an item or range of items.

*d. Federal Supply Code for Manufacturer (FSCM).* The FSCM is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., and is identified in SB 708-42.

*e. Description.* Indicates the Federal item name and a minimum description required to identify the item.

*f. Unit of Measure (U/M).* Indicates the standard of basic quantity of the listed item as used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation, (e.g., ea, in., pr, etc.). When the unit of measure differs from the unit of issue, the lowest unit of issue that will satisfy the required units of measure will be requisitioned.

*g. Quantity Furnished with Equipment (Basic Issue Items Only).* Indicates the quantity of the basic issue item furnished with the equipment.

## Section II. BASIC ISSUE ITEMS LIST

| (1) ILLUSTRATION (A) FIG. NO. | (1) ILLUSTRATION (B) ITEM NO. | (2) FEDERAL STOCK NUMBER | (3) PART NUMBER | (4) FSCM | (5) DESCRIPTION USABLE ON CODE | (6) UNIT OF MEAS | (7) QTY FURN WITH EQUIP |
|---|---|---|---|---|---|---|---|
| 1-1 | | 5340-356-4895 | SC-B-98316 | 80063 | SLING, CARRYING, BAG AND CASE | EA | 1 |
| 1-1 | | 5805-615-6503 | SC-B-98316 | 80063 | CASE, ELECTRICAL EQUIPMENT CABINET, CASE LESS COVER AND STRAP (INSTALLED IN EQUIPMENT) | EA | 1 |
| 1-1 | | 5805-625-5418 | SC-B-98316 | 80063 | COVER ASSEMBLY, P/O CASE ELECTRICAL EQUIPMENT CABINET (INSTALLED IN EQUIPMENT) | EA | 1 |

# APPENDIX III

# MAINTENANCE ALLOCATION

## Section I. INTRODUCTION

### A3-1. General

*a.* This appendix assigns maintenance functions to be performed on components, assemblies, and subassemblies by the lowest appropriate maintenance category.

*b.* Columns in the maintenance allocation chart are as follows:

(1) *Part or component.* This column shows only the nomenclature or standard item name. Additional descriptive data are included only where clarification is necessary to identify the component. Components, assemblies, and subassemblies are listed in top-down order. That is, the assemblies which are part of a component are listed immediately below that component, and subassemblies which are part of an assembly are listed immediately below that assembly. Each generation breakdown (components, assemblies, or subassemblies) is listed in disassembly order or alphabetical order.

(2) *Maintenance function.* This column indicates the various maintenance functions allocated to the categories.

(*a*) *Service.* To clean, to preserve, and to replenish lubricants.

(*b*) *Adjust.* To regulate periodically to prevent malfunction.

(*c*) *Inspect.* To verify serviceability and detect incipient electrical or mechanical failure by scrutiny.

(*d*) *Test.* To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, etc.

(*e*) *Replace.* To substitute serviceable components, assemblies, or subassemblies, for unserviceable components, assemblies, or subassemblies.

(*f*) *Repair.* To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function includes but is not limited to welding, grinding, riveting, straightening, and replacement of parts other than the trial and error replacement of runninng spare type items such as fuses, lamps, or electron tubes.

(*g*) *Align.* To adjust two or more components of an electrical system so that their functions are properly synchronized.

(*h*) *Calibrate.* To determine, check, or rectify the graduation of an instrument, weapon, or weapons system, or components of a weapons system.

(*i*) *Overhaul.* To restore an item to *completely serviceable* condition as prescribed by serviceability standards developed. This is accomplished through employment of the technique of "Inspect and Repair Only as Necessary" (IROAN). Maximum utilization of diagnostic and test equipment is combined with minimum disassembly of the item during the overhaul process.

(*j*) *Rebuild.* To restore an item to a standard as near as possible to original or new condition in appearance, performance, and life expectancy. This is accomplished through the maintenance technique of complete disassembly of the item, inspection of all parts or components, repair or replacement of worn or unserviceable elements using original manufacturing tolerances and/or specifications and subsequent reassembly of the item.

(3) *Operator, organization, direct support, general support and depot.* The symbol X indicates the categories responsible for performing that particular maintenance operation, but does not necessarily indi-

cate that repair parts will be stocked at that level. Categories higher than those marked by X are authorized to perform the indicated operation.

(4) *Tools required.* This column indicates codes assigned to each individual tool equipment, test equipment, and maintenance equipment referenced. The grouping of codes in this column of the maintenance allocation chart indicates the tool, test, and maintenance equipment required to perform the maintenance function.

(5) *Remarks.* Entries in this column will be utilized when necessary to clarify any of the data cited in the preceding columns.

*c.* Columns in the allocation of tools for maintenance functions are as follows:

(1) *Tools required for maintenance functions.* This column lists tools, test, and maintenance equipment required to perform the maintenance functions.

(2) *Operator, organization, direct support, general support, and depot.* The dagger (†) indicates the categories normally allocated the facility.

(3) *Tool code.* This column lists the tool code assigned.

## A3-2. Maintenance by Using Organizations

When this equipment is used by signal services organizations organic to theater headquarters or communication zones to provide theater communications, those maintenance functions allocated up to and including general support are authorized to the organization operating this equipment.

SECTION II. MAINTENANCE ALLOCATION CHART

| PART OR COMPONENT | MAINTENANCE FUNCTION | ECHELON O/C | ECHELON O | ECHELON DS | ECHELON GS | ECHELON D | TOOLS REQUIRED | REMARKS |
|---|---|---|---|---|---|---|---|---|
| CONVERTER, TELEGRAPH-TELEPHONE SIGNAL, TA-182/U | service | X | | | | | | Exterior |
| | | | X | | | | 10 | Exterior and interior |
| | adjust | X | | | | | | Initial adjustment of controls |
| | | | | X | | | 1,8,10 | All adjustments |
| | inspect | X | | | | | | Exterior |
| | | | X | | | | 10 | Exterior and interior |
| | test | | X | | | | 3,7,10,11 | Voltage, resistance, tubes |
| | | | | X | | | 1,4,7,8,9,10,11,12,13 | Power levels, frequency, solid state devices |
| | | | | | X | | 1,2,4,5,6,7,8,9, 10,11,12,13 | All tests (tool code G for 5th Ech only) |
| | replace | | X | | | | | Semi-conductor devices, tubes |
| | repair | | X | | | | 10 | Connector only |
| | | | X | | | | 10 | All other repairs |
| | align | | | | X | | 1,2,4,5,8,10 | All alignments |
| | overhaul | | | | | X | 10 | |

SECTION III. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS

| TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS | MAINTENANCE CATEGORY O/C | O | DS | GS | D | TOOL CODE | REMARKS |
|---|---|---|---|---|---|---|---|
| TA-182/U (continued) | | | | | | | |
| Frequency Meter, AN/TSM-15 | | | / | / | / | 1 | |
| Impedance Bridge, TS-460/U | | | | / | / | 2 | |
| Multimeter, AN/URM-105 | | / | | | | 3 | |
| Multimeter, TS-352/U | | | / | / | / | 4 | |
| Ringer, TA-48/PT | | | | / | / | 5 | |
| Test Set, Electron Tube, TV-2/U | | | | | / | 6 | |
| Test Set, Electron Tube, TV-7/U | | / | / | / | | 7 | |
| Test Set, TS-140/PCM | | | / | / | / | 8 | |
| Test Set, TS-190/U | | | / | / | / | 9 | |
| Tool Equipment, TE-123 | | / | / | / | / | 10 | |
| Tube Socket Adapter Kit, MX-1258/U | | / | / | / | / | 11 | |
| Test Set, Transistor, TS-1836/U | | | / | / | / | 12 | |
| Telephone Set, TA-312/PT | | | / | / | / | 13 | Shop support. |

# APPENDIX IV

# ORGANIZATIONAL REPAIR PARTS LIST

## Section I. INTRODUCTION

### A4-1. General

*a.* This manual lists the quantities of repair parts authorized for organizational maintenance and constitutes a basis of requisitioning when the major item of equipment is authorized to the organization. These equipments are issued on the basis of allowances prescribed in equipment authorization tables and other documents which are a basis of requisitioning.

*b.* Columns are as follows:

(1) *Federal stock number.* This column lists the 11-digit Federal stock number.

(2) *Designation by model.* Not used.

(3) *Description.* Nomenclature or the standard item name and brief identifying data for each item are listed in this column. When requisitioning, enter the nomenclature and description.

(4) *Unit of issue.* The unit of issue is each unless otherwise indicated and is the supply term by which the individual item is counted for procurement, storage, requisitioning, allowances, and issue purposes.

(5) *Expendability.* Nonexpendable items are indicated by NX. Expendable items are not annotated.

(6) *Quantity incorporated in unit.* This column lists the quantity of each part found in a given assembly, component, or equipment.

(7) *Organizational.* The quantities indicated in this column are maximum levels of repair parts authorized to be kept on hand by units performing organizational maintenance. The quantities are based on 100 equipments to be maintained for a 15-day period.

(8) *Illustration.* The "Item No." column lists the reference designations that appear on the part in the equipment. These same designations are also used on any illustrations of the equipment. The numbers in the "Figure No." column refer to the illustrations where the part is shown.

### A4-2. Parts for Maintenance

When this equipment is used by signal service organizations organic to theater headquarters or communication zones to provide theater communications, these repair parts authorized up to and including general support are authorized for stockage by the organization operating this equipment.

### A4-3. Additional Repair Parts Authorization

An asterisk (*) indicates that an item is not authorized for stockage but if required, may be requisitioned for immediate use only.

### A4-4. Electron Tubes

The consumption rates given for tubes are conservative theoretical estimates and are provided for use only when more complete information, such as data based on operating experience, is not available. These figures are based on levels and requirements for equipment actually in use, not on authorizations or equipment stored in depots.

### A4-5. Requisitioning Information

*a.* The allowance factors are based on 100 equipments. In order to determine the number of parts authorized for the specific number of equipments supported, the following formula will be used and carried out to two decimal places.

$$\text{Specific number of equipments supported} \times \frac{\text{allowance factor}}{100} = \text{Number of parts authorized.}$$

*b.* Fractional values obtained from above computation will be rounded to whole numbers as follows:

(1) When the total number of parts authorized is less than one, the quantity authorized will be one.

(2) For all values above one, fractional values below 0.5 will revert to the next lower number, fractional values of 0.5 or larger will advance to the next higher whole number.

*c.* The number of parts authorized, determined after application of *a* and *b* above, represent one prescribed load for a 15-day period. The items and computed quantities thereof must be on hand or on order at all times.

*d.* Major commanders will determine the number of prescribed loads organizational units will carry. Units and organizations authorized additional prescribed loads will utilize the formula explained in *a* above but will multiply the number of equipments supported by the number of authorized prescribed loads before completing the formula. Fractional values will be rounded to whole numbers as described above.

| FEDERAL STOCK NUMBER | DESIGNATION BY MODEL | DESCRIPTION | UNIT OF ISSUE | EXP | QTY IN UNIT | ORGAN-IZATIONAL | ILLUSTRATION | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | FIGURE NO. | ITEM NO |
| | | CONVERTER, TELEGRAPH-TELEPHONE SIGNAL TA-182/U | | | | | | |
| 5805-263-3326 | | CONVERTER, TELEGRAPH SIGNAL TA-182/U: ring down signal; sb side ac received and transmitted, 20 cyc received and transmitted; oper power requirements 115v ac, 50/60 cyc, single ph; 11 in. lg x 10-1/2 in. wd x 7-1/2 in h o/a | | EX | | | 1-1 | |
| 5920-244-5150 | | CAP, ELECTRICAL | | | 1 | * | 1-1 | 6 |
| 5940-254-2244 | | CAP, ELECTRICAL: black; Sig dwg SC-C-76202-1 | | | 8 | * | | |
| 5805-615-6503 | | CASE, ELECTRICAL EQUIPMENT CABINET: case F/TA-182/U; Sig dwg SC-D-98317 | | | 1 | * | 1-1 | 1 |
| 5935-518-9653 | | CONNECTOR, PLUG, ELECTRICAL: MIL type UP12CM | | | 1 | 1.0 | 1-1 | P1 |
| 5805-625-5418 | | COVER, ASSEMBLY: p/o Case Converter; Sig dwg No. SC-C-98314 | | | 1 | * | 1-1 | 2 |
| 5960-166-7663 | | ELECTRON TUBE: MIL type 12AU7 | | | 3 | 52.5 | 2-2 | V2, V5, V6 |
| 5960-166-7664 | | ELECTRON TUBE: MIL type 12AX7 | | | 1 | 17.5 | 2-2 | V1 |
| 5920-280-4465 | | FUSE, CARTRIDGE: 1 amp, 250v; MIL type FO2G1R00A | | | 1 | 7.8 | 2-2 | F1 |
| 5355-160-6850 | | KNOB: bar; for 1/4 in. dia shaft; 1-1/4 in. lg x 3/4 in. w x 5/8 in. h; Sig dwg No. SC-B-93352 | | | 2 | * | 1-1 | 5 |
| 6240-143-3060 | | LAMP, INCANDESCENT: GE type No. 6S6DC-120 | | | 1 | 6.0 | 2-2 | DS1 |
| 6130-076-3545 | | RECTIFIER, SEMICONDUCTOR DEVICE: Sig dwg SC-C-141342 6AL5/X3DR | | | 2 | 1.5 | 2-2 | V3, V4 |
| 6130-076-3546 | | RECTIFIER, SEMICONDUCTOR DEVICE: Sig dwg SC-C-141343 6X4/X1DR | | | 2 | 1.5 | 2-2 | V7, V8 |
| 5960-264-3004 | | SHIELD, ELECTRON TUBE: MIL type TS-103U02 | | | 4 | * | | 3 |
| 5340-356-4895 | | SLING, CARRYING, BAG AND CASE: Sig dwg No. SC-B-98316 | | | 1 | * | 1-1 | 1 |

By Order of the Secretary of the Army:

HAROLD K. JOHNSON,
*General, United States Army,*
*Chief of Staff.*

Official:
J. C. LAMBERT,
*Major General, United States Army,*
*The Adjutant General.*

Distribution:
*Active Army:*
USASA (2)
CNGB (1)
CC-E (7)
Dir of Trans (1)
CofEngrs (1)
TSG (1)
CofSptS (1)
USAAESWBD (5)
USACDCEA (1)
USACDCCBRA (1)
USACDCOA (1)
USACDCQMA (1)
USACDCTA (1)
USACDCADA (1)
USACDCARMA (1)
USACDCAVNA (1)
USACDCARYTA (1)
USACDCSWA (1)
USACDCCEA (1)
USACDCCEA:
Ft Huachuca (1)
USACDCEC(10)
USMA(5)
USCONARC (5)
ARADCOM (5)
ARADCOM Rgn (5)
OS Maj Comd (4)
USAMERCC (5)
LOGCOMD (2)
USAMICOM (4)
USASMC (2)
USASCC (4)
MDW (1)
Armies (2) except
Seventh (5)
EUSA (5)
Corps (2)
USAC (3)
11th Air Aslt Div (3)
507th USASA Gp (5)
508th USASA Gp (5)
318th USASA Bn (5)
319th USASA Bn (5)
320th USASA Bn (5)
177th USASA Co (5)
182nd USASA Co (5)
183rd USASA Co (5)
184th USASA Co (5)
226th USASA Co (5)
251st USASA Co (5)
600th USASA Co (5)
MAAG:
Taiwan (5)
Vietnam (5)
4th USASA Fld Sta (5)
12th USASA Fld Sta (5)
13th USASA Fld Sta (5)
14th USASA Fld Sta (5)
15th USASA Fld Sta (5)
Svc Colleges (2)
Br Svc Sch (2) except
USASESCS (90)
USAES (5)
USAQMS (5)
USAIS (5)
USASCS (5)
USAARMS (5)
USAAMS (5)
USATSCH (5)
USMA (5)
GENDEP (2)
Sig Sec GENDEP (5)
Sig Dep (12)
A Dep (2) except
SAAD (30)
TOAD (14)
FTWOAD (10)
LEAD (7)
SHAD (3)
NAAD (5)
SVAD (5)
CHAD (3)
ATAD (10)
LBAD (14)
USASTC (2)
USATC AD (2)
USATC Armor (2)
USATC Engr (2)
USATC Inf (2)
Army Pic Cen (2)
WRAMC (2)
Instl (2) except
Ft Monmouth (70)
Ft Hancock (4)
Ft Gordon (10)
Ft Huachuca (10)
Ft Carson (25)
Ft Knox (12)
Ft Devens (5)
JCA, Ft Ritchie (5)
WSMR (5)
Sig Fld Maint Shops (2)
AMS (1)
USAERDAA (2)
USAERDAW (13)
KMAG (5)
Units organized under following TOE's (2 copies each):

| | |
|---|---|
| 1-127 | 8-36 |
| 1-137 | 8-122 |
| 1-207 | 8-126 |
| 3-32 | 8-137 |
| 5-25 | 8-187 |
| 5-26 | 8-551 |
| 5-35 | 8-581 |
| 5-36 | 8-590 |
| 5-52 | 8-667 |
| 5-112 | 9-12 |
| 5-145 | 9-17 |
| 5-146 | 9-22 |
| 5-155 | 9-47 |
| 5-156 | 9-75 |
| 5-237 | 9-76 |
| 5-267 | 9-86 |
| 5-279 | 9-87 |
| 5-500 (AA-AD) | 9-227 |
| | 9-377 |
| 5-600 | 10-17 |
| 5-605 | 10-22 |
| 6-501 | 10-77 |
| 6-555 | 10-105 |
| 6-556 | 10-106 |
| 6-557 | 10-107 |
| 6-615 | 10-127 |
| 6-616 | 10-201 |
| 6-617 | 10-202 |
| 6-635 | 10-206 |
| 6-636 | 10-349 |
| 7 | 10-377 |
| 7-4 | 10-407 |
| 7-11 | 10-417 |
| 7-12 | 10-445 |
| 7-42 | 10-446 |
| 8-35 | 10-447 |

10-448
10-467
10-500 (AA-AD)
10-521
10-536
11-8
11-32
11-35
11-36
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11-45
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11-166
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11-217
11-218
11-237
11-247
11-308
11-337
11-500 (AA-AC)
11-587
11-592
11-597
11-608
17
17-4
17-42
17-51
17-52
19-252
19-256
29-1
29-5
29-6
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29-35
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29-46
29-51
29-56
29-65
29-311
30-5
30-6
30-7
30-25
30-26
30-27
30-28
30-29
30-500 (AA-AE)
32-52
32-56
32-57
32-67
32-68
32-78
32-500
33-56
37
37-4
37-42
39-51
44-2
44-12
44-235
44-236
44-436
44-536
54-2
54-102
54-202
55-11
55-12
55-16
55-46
55-56
55-89
55-116
55-126
55-131
55-158
55-225
55-227
55-260
55-458
55-500 (AA-AE)
57
57-42

*NG:* State AG (3); units—same as Active Army except allowance is one copy to unit.
*USAR:* None.
For explanation of abbreviations used, see AR 320-50.

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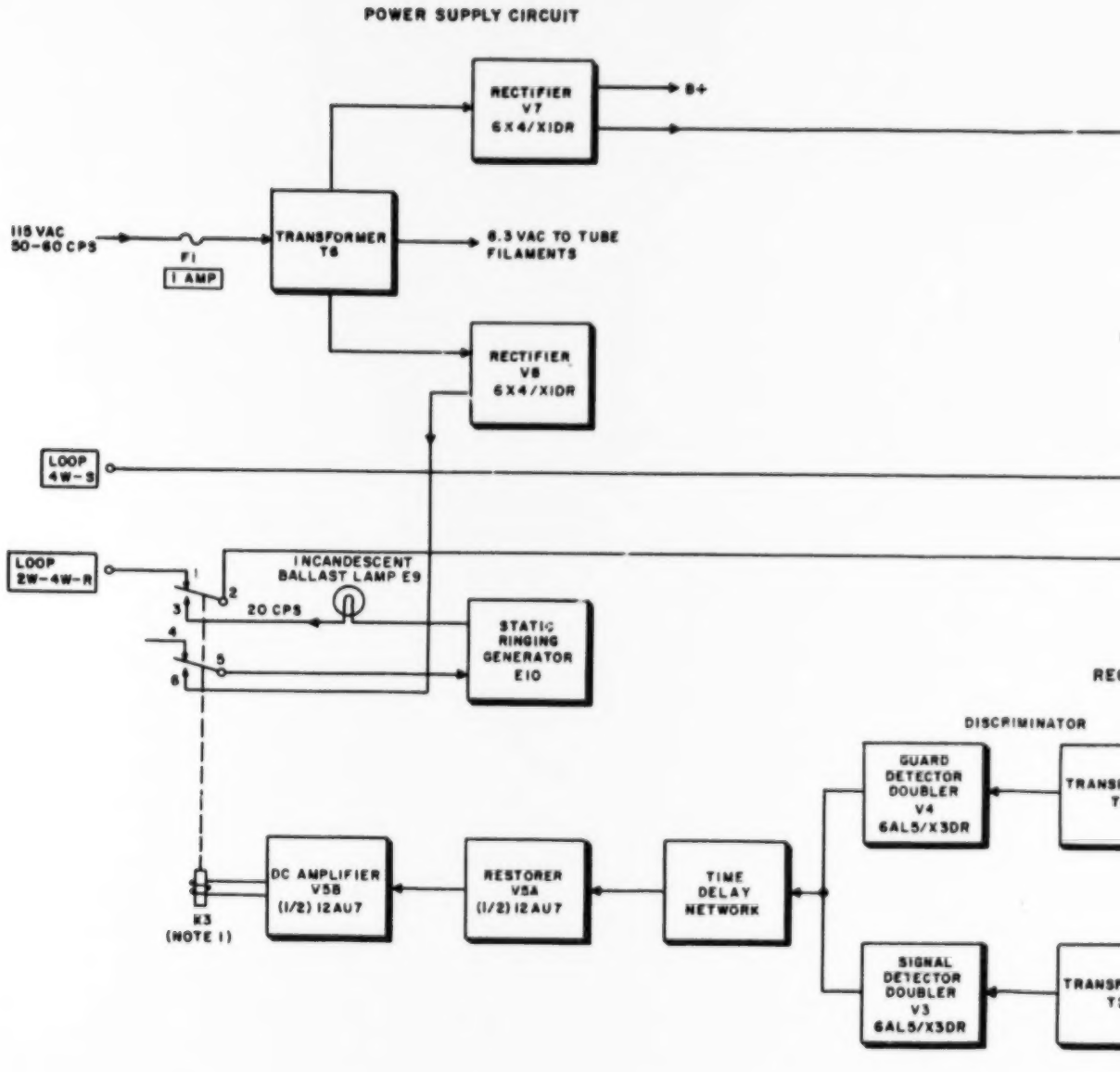
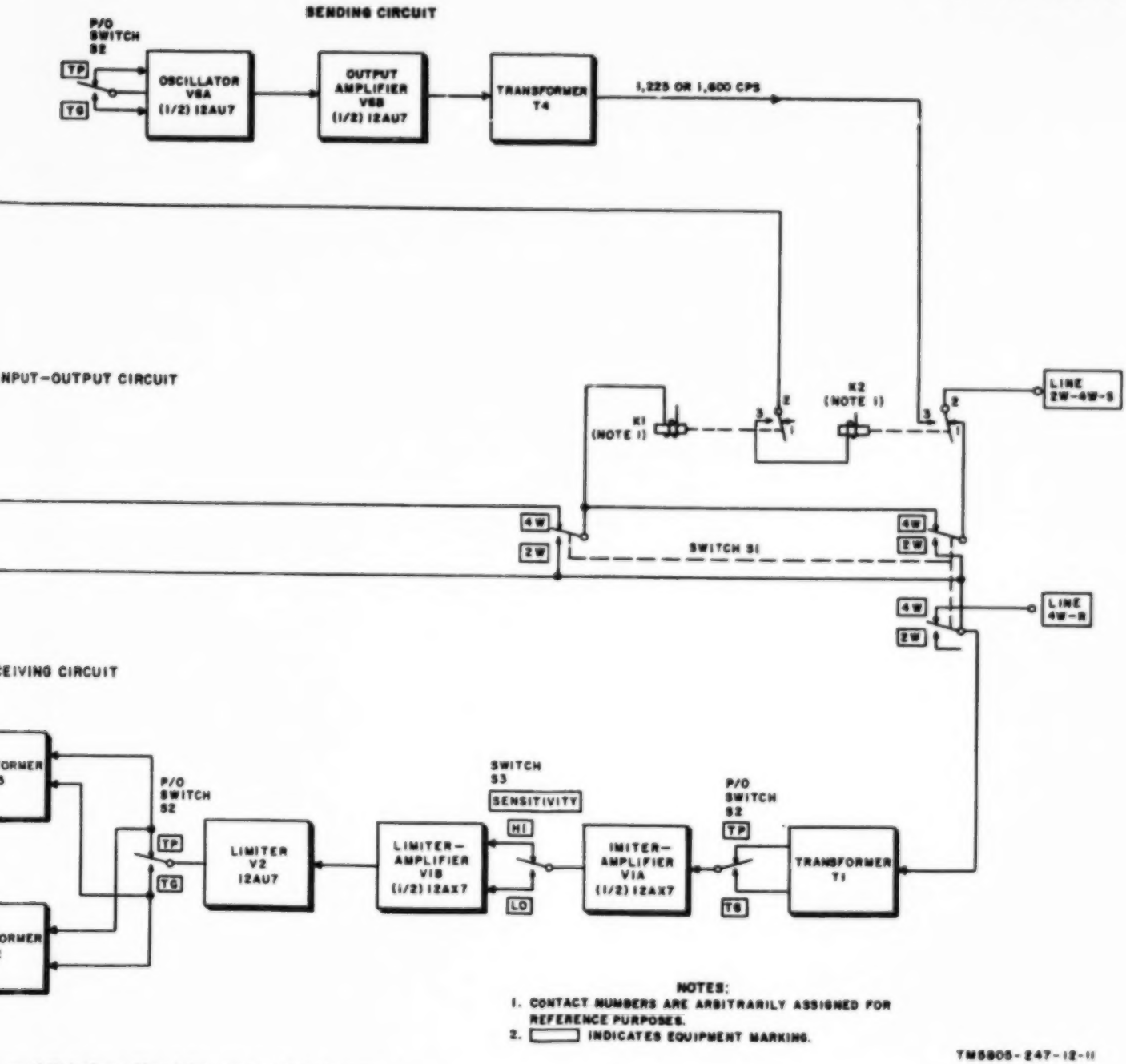



*Figure 8-1. Converter, Tel*




NOTES:
1. CONTACT NUMBERS ARE ARBITRARILY ASSIGNED FOR REFERENCE PURPOSES.
2. ▭ INDICATES EQUIPMENT MARKING.

TM5805-247-12-11

*...graph-Telephone Signal TA-182/U, block diagram.*

PIN: 021843-000